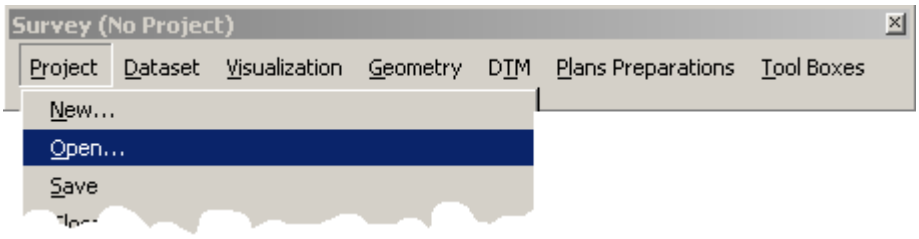
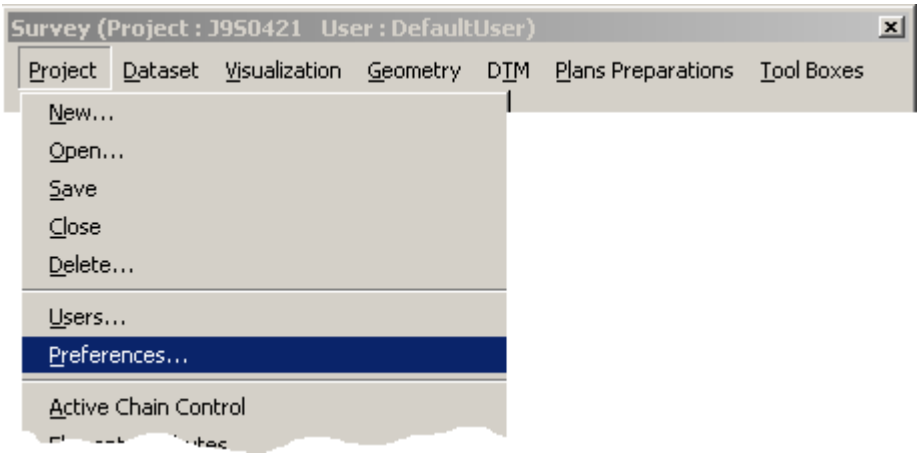
1) Open T:\de-proj\Iron\J0S0421\project\ **XS_Route_W.dgn**

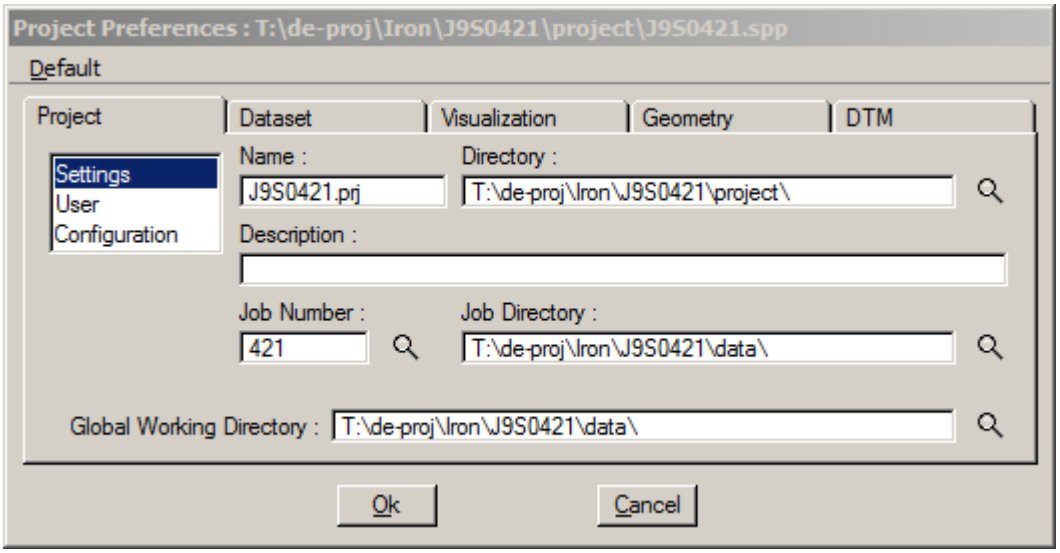
2) Select **Applications > GeoPak Survey** and Open the following Project:

T:\de-proj\Iron\J0S0421\project \J0P0929.prj

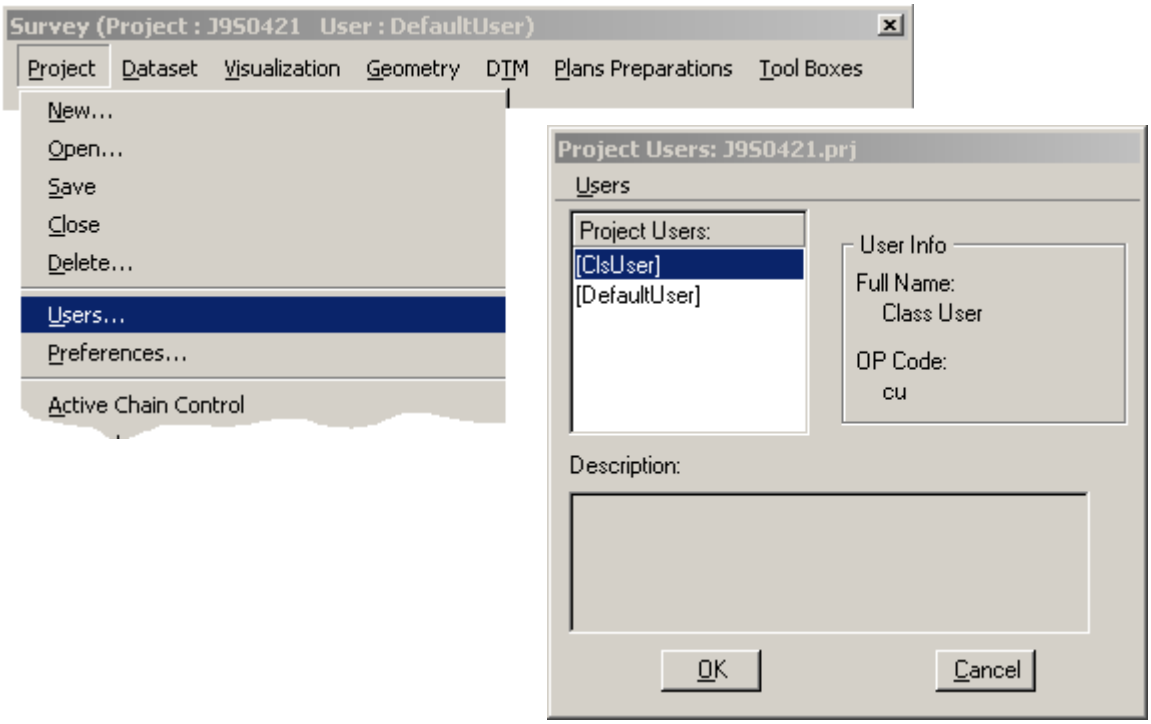


In the **Survey Preferences**, make sure the job number is set to **421**



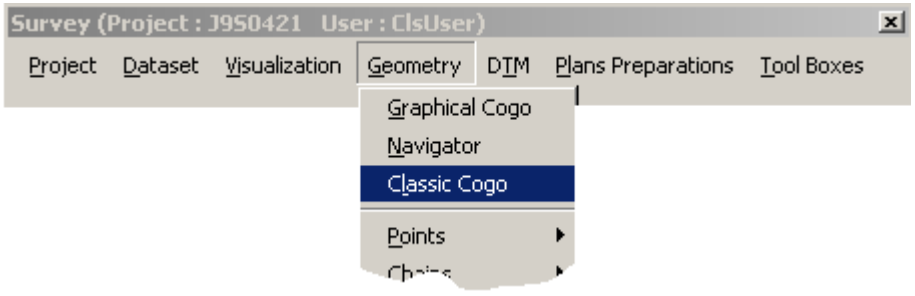


3) Select "**ClsUser**" as the Project User.

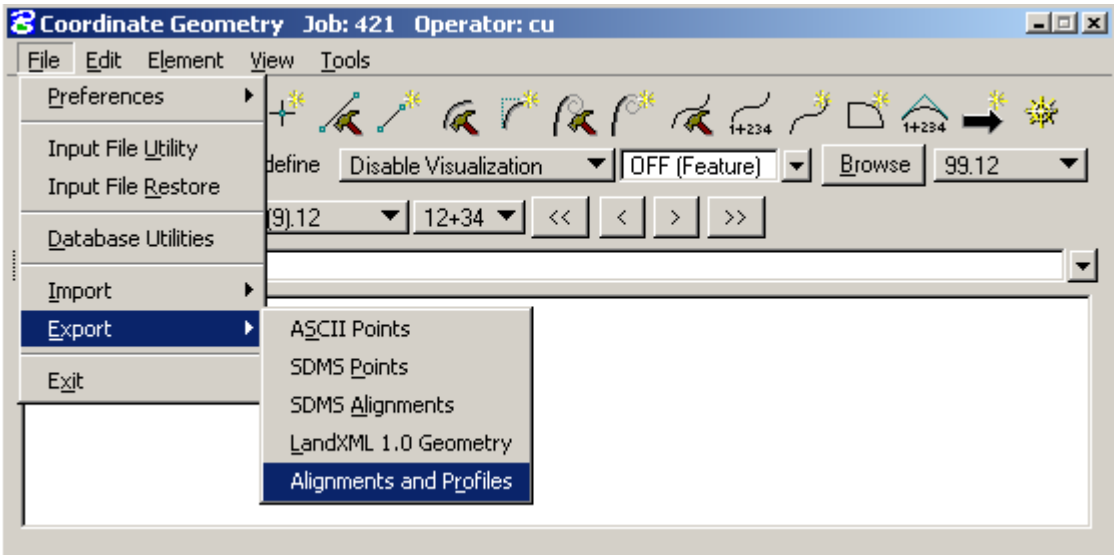


4) Next, we need to create a file (RD5 file for Carlson) that contains the alignment information for Route 63. To do this there are two ways to access the tool. One way is to open Coordinate Geometry by selecting the following from the Survey Menu Bar:

Geometry > Classic Cogo

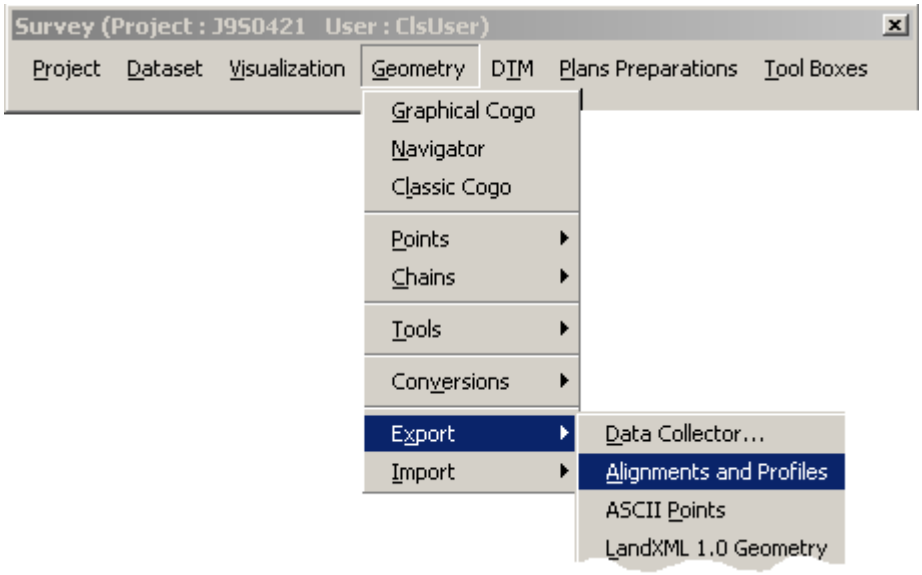


5) Once in Coordinate Geometry select **File > Export > Alignments and Profiles**

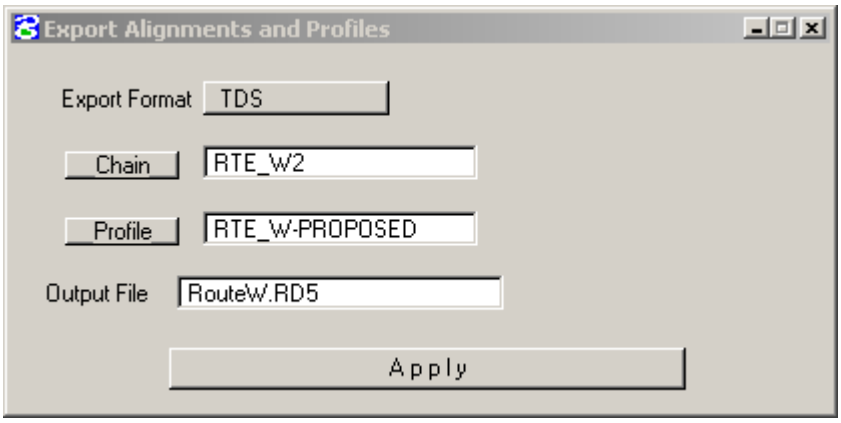


6) Another way to open the **Alignments and Profile** tool is to select the following from the Survey Menu Bar:

Geometry > Export > Alignments and Profiles



7) In the Export Dialog set the following fields: Begin Point, Export Format, Chain, Profile, and the name of the Output file.



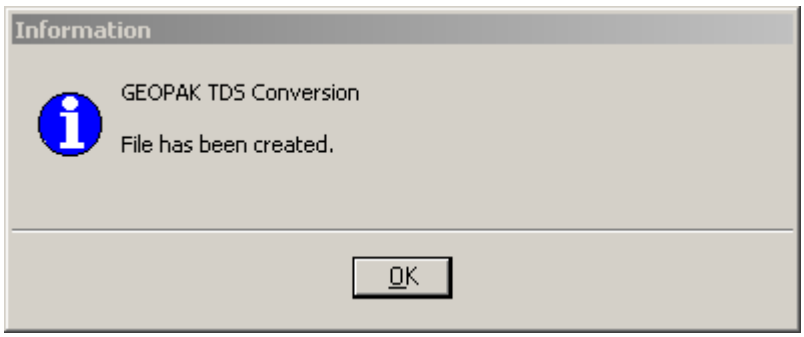
Export Format = TDS will work with the current Carlson version.

Chain = The Baseline of the Cross Sections that you're wanting to export.

Profile = Proposed profile that is associated to the Chain/Profile. (**Optional**)

Output Format = Name of the chain file that you want to create. This will be the file that will be imported into your calculator.

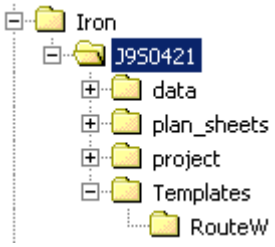
8) When the "**Apply**" button is selected GeoPak will show you the following Dialog:



9) Using **Windows Explorer**, create the following folder Structure:

T:\de-proj\Iron\J0S0421**Templates\RouteW**

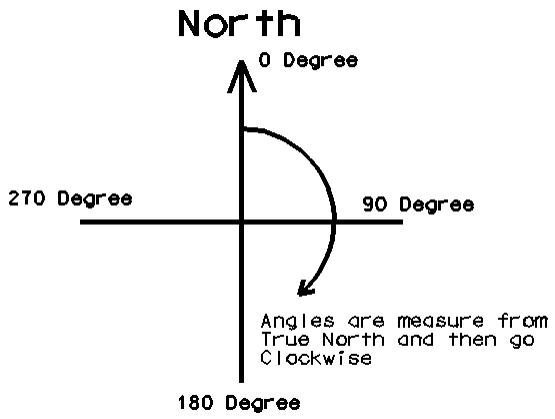
Move the **RouteW.RD5** file from the **data** folder to the **RouteW** folder.



10) Below is what the RouteW.RD5 looks like in UltraEdit (or any other Text editor).

```
HR++++++++++++++++++++++++++++++++
HL,28.47424,61.421
HL,31.10489,87.771
HL,30.09330,94.466
HL,30.45567,779.623
HL,30.48239,176.395
HL,30.20584,138.165
HL,30.15459,93.243
HL,30.32203,206.276
HL,30.06296,94.329
HL,30.22244,92.375
HL,30.17201,96.619
HL,30.49258,77.451
HL,30.34418,140.376
HL,31.02187,137.020
HL,33.05493,115.599
HL,34.43215,115.599
HL,37.12381,78.136
HL,37.43489,96.472
HL,38.08392,86.852
HL,38.35489,97.434
HL,38.31362,94.645
HL,38.51206,89.809
HL,38.19255,68.485
HL,38.52467,140.463
HL,39.30188,95.045
HL,38.53259,108.236
HL,38.27561,61.537
HL,38.05528,38.667
HL,-1.00000,38.667
HL,36.13565,52.849
HL,33.16237,53.159
HL,30.33370,34.833
HL,27.48385,47.680
HL,26.20358,42.624
HL,21.59177,47.387
HL,19.53373,35.362
HL,16.25250,57.469
HL,14.27558,47.075
HL,11.09319,44.389
HL,8.44040,35.244
HL,5.38129,48.370
HL,1.05178,66.201
HL,359.48223,35.033
HL,356.17362,56.857
HL,353.26545,78.676
HL,350.53468,115.094
HL,349.36568,91.283
HL,349.15412,74.427
HL,348.30017,51.183
HL,349.17269,57.763
HL,348.40206,90.622
HL,349.04121,56.112
HL,348.30398,63.748
HL,349.39216,55.804
HL,348.30209,64.289
HL,349.21097,112.701
HL,349.06284,64.716
HL,349.18380,57.062
HL,349.11514,178.620
HC,349.06281,954.930,867.648,R
HL,-1.00000,1838.710
HC,-1.00000,1909.859,983.333,L
HL,-1.00000,79.659
HL,-1.00000,2159.794
VR++++++++++++++++++++++++++++++++
VG,50.000,-3.680
VG,50.000,-3.480
VG,50.000,-2.700
VG,50.000,-1.340
VG,50.000,0.520
VG,50.000,0.560
VG,65.410,-0.061
VG,64.543,-0.122
VC,350.001,-0.122,3.590
VG,307.776,3.590
VC,780.000,3.590,-2.333
VG,86.550,-2.333
VC,420.000,-2.333,2.183
VG,244.460,2.183
VC,1000.000,2.183,-6.102
VG,8.860,-6.102
VG,56.330,-5.059
VG,32.670,-5.448
VG,31.280,-4.124
VG,31.270,-4.125
VG,34.520,-4.635
VG,38.690,-3.231
VG,50.790,-3.170
VG,40.200,-2.634
VG,58.140,-2.634
VG,48.510,-2.845
VG,50.000,-2.840
VG,50.000,-3.700
VG,50.000,-4.060
VG,850.002,-0.026
XR++++++++++++++++++++++++++++++++
XL++++++++++++++++++++++++++++++++
```

10 Cont.) The Alignment and Profile portion of RD5 file is formatted with the following nomenclature:



HL,31.10489,87.771

```
HL        = Horizontal Line
31.10489  = Line Direction
87.771    = Line Distance.
```

HC,349.06281,954.930,867.648,R

```
HC        = Horizontal Curve
349.06281 = Direction Back
954.930   = Curve Radius
867.648   = Curve Length
R         = Curve turning to the right
```

HS,97.01374,1000.000,500.000,L,T

```
HS        = Horizontal Spiral
97.01374  = Direction Back
1000.000  = Radius
 500.000  = Spiral Length
L         = Spiral turning to the Left
T         = Spiral Back (after tangent)
     or
C         = Spiral Ahead (after Curve)
```

VG,50.000,-3.680

```
VG        = Vertical Grade
50.000    = Distance
-3.680    = Grade
```

VC,350.001,-0.122,3.590

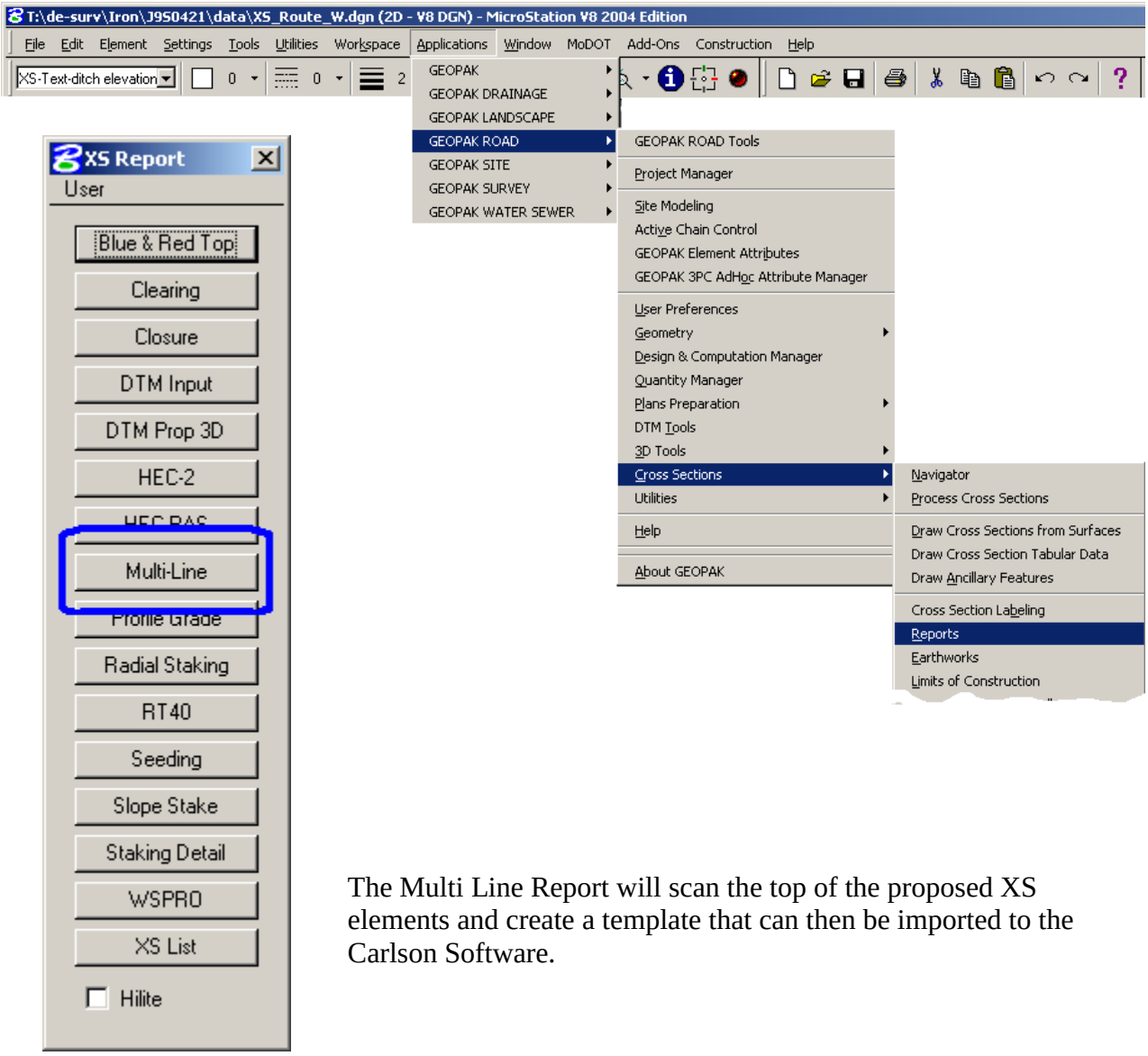
```
VC        = Vertical Curve
350.001   = Length of Curve
 -0.122   = Back Grade
  3.590   = Forward Grade
```

11) Next, we'll Export Template information from a GeoPak Cross Section file using the Multi-Line Report located in the Reports & XS Quantities.

** You'll need to be in a XS file and in Project Manager in order to run XS Reports.

To access the Reports and Quantities dialog select the following:

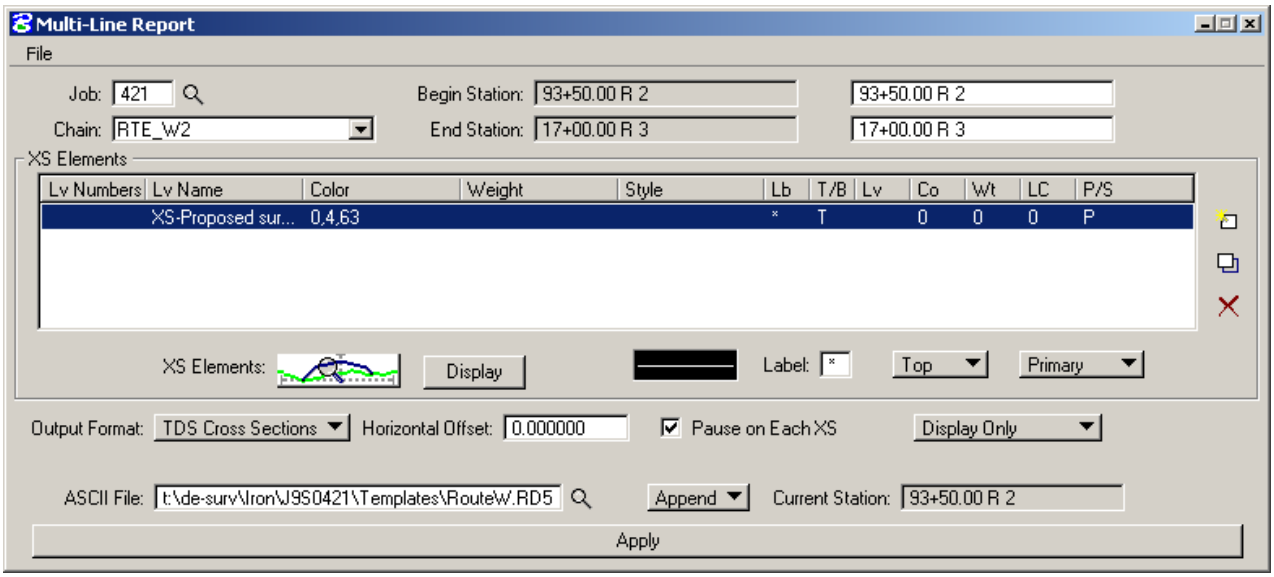
Applications > GeoPak Road > Cross Sections > Reports



The Multi Line Report will scan the top of the proposed XS elements and create a template that can then be imported to the Carlson Software.

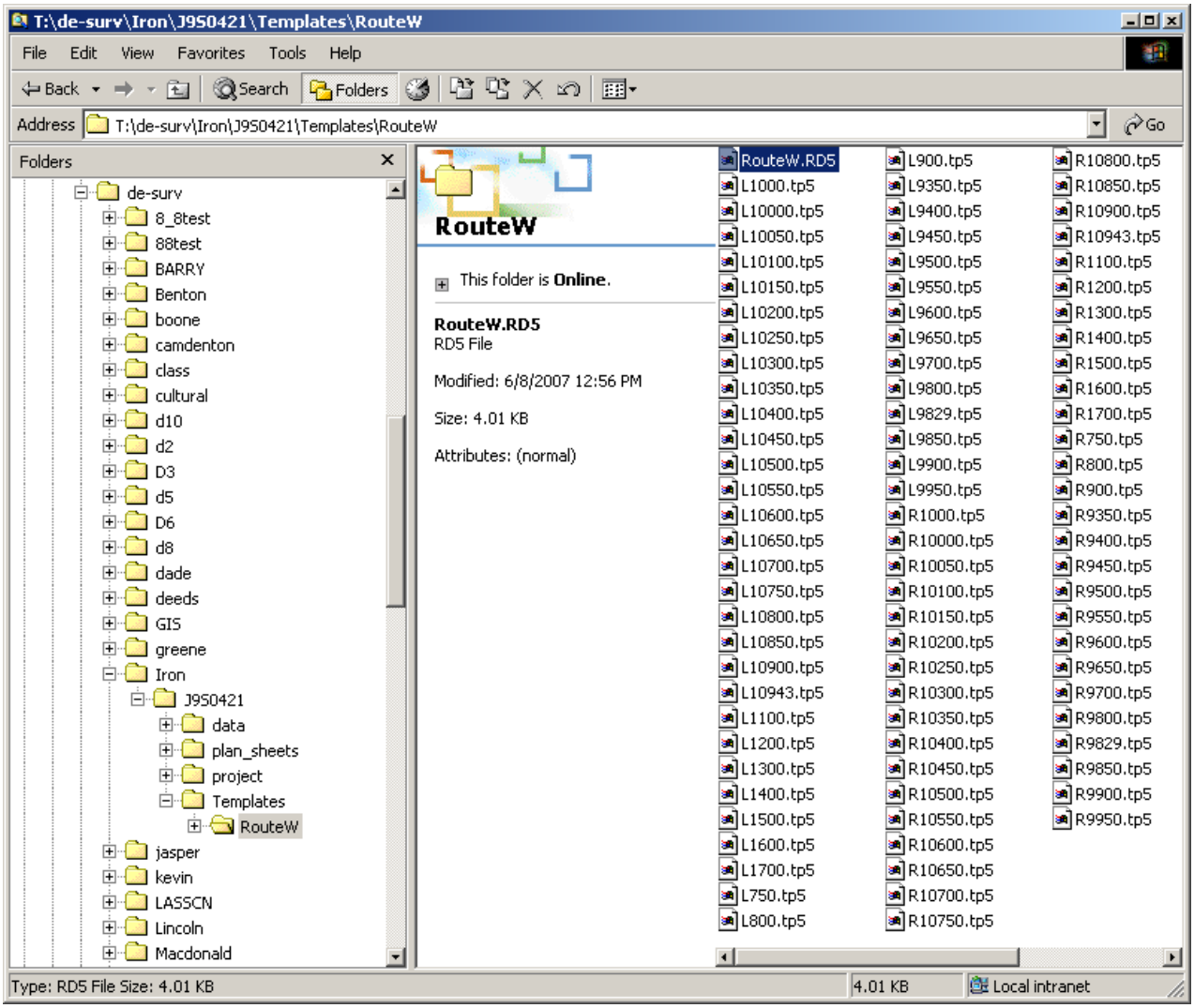
12) Adjust the following setting:

Job/GPK	**421**
Chain	**RTE_W2**
Station Range	**93+50 R 2 to 17+00 R 3**
Level Name	**XS-Proposed surface-ground** **XS-Proposed surface-shoulder** **XS-Proposed surface-pavement**
Color	**0,4,63**
T/B (Top/Bottom)	**T**
P/S (Primary/Secondary)	**P**
Output format	**TDS Cross Sections**
ASCII File	**t:\de-proj\Iron\J9S0421\Templates\RouteW\RouteW.RD5**
Create/New	**Append file**



* * * Before you Apply (process) the report make sure the ASCII (RD5) file has the same name that was used in the exported of the Alignment and Profile data (Step 1). Also make sure Append is selected.

13) After running the Multi-Line Report the user will see that GeoPak will created new files for the Left and Right side of each Cross Section. These file are referenced by the main/original RD5 file (See on next page).



14) Below is what is **appended** to the original **RouteW.RD5** file.

```
XR++++++++++++++++++++++++++++++++
RT,93,50.000,R9350
RT,94,0.000,R9400
RT,94,50.000,R9450
RT,95,0.000,R9500
RT,95,50.000,R9550
RT,96,0.000,R9600
RT,96,50.000,R9650
RT,97,0.000,R9700
RT,98,0.000,R9800
RT,98,29.000,R9829
RT,98,50.000,R9850
RT,99,0.000,R9900
RT,99,50.000,R9950
RT,100,0.000,R10000
RT,100,50.000,R10050
RT,101,0.000,R10100
RT,101,50.000,R10150
RT,102,0.000,R10200
RT,102,50.000,R10250
RT,103,0.000,R10300
RT,103,50.000,R10350
RT,104,0.000,R10400
RT,104,50.000,R10450
RT,105,0.000,R10500
RT,105,50.000,R10550
RT,106,0.000,R10600
RT,106,50.000,R10650
RT,107,0.000,R10700
RT,107,50.000,R10750
RT,108,0.000,R10800
RT,108,50.000,R10850
RT,109,0.000,R10900
RT,109,43.340,R10943
RT,7,50.000,R750
RT,8,0.000,R800
RT,9,0.000,R900
RT,10,0.000,R1000
RT,11,0.000,R1100
RT,12,0.000,R1200
RT,13,0.000,R1300
RT,14,0.000,R1400
RT,15,0.000,R1500
RT,16,0.000,R1600
RT,17,0.000,R1700
XL++++++++++++++++++++++++++++++++
LT,93,50.000,L9350
LT,94,0.000,L9400
LT,94,50.000,L9450
LT,95,0.000,L9500
LT,95,50.000,L9550
LT,96,0.000,L9600
LT,96,50.000,L9650
LT,97,0.000,L9700
LT,98,0.000,L9800
LT,98,29.000,L9829
LT,98,50.000,L9850
LT,99,0.000,L9900
LT,99,50.000,L9950
LT,100,0.000,L10000
LT,100,50.000,L10050
LT,101,0.000,L10100
LT,101,50.000,L10150
LT,102,0.000,L10200
LT,102,50.000,L10250
LT,103,0.000,L10300
LT,103,50.000,L10350
LT,104,0.000,L10400
LT,104,50.000,L10450
LT,105,0.000,L10500
LT,105,50.000,L10550
LT,106,0.000,L10600
LT,106,50.000,L10650
LT,107,0.000,L10700
LT,107,50.000,L10750
LT,108,0.000,L10800
LT,108,50.000,L10850
LT,109,0.000,L10900
LT,109,43.340,L10943
LT,7,50.000,L750
LT,8,0.000,L800
LT,9,0.000,L900
LT,10,0.000,L1000
LT,11,0.000,L1100
LT,12,0.000,L1200
LT,13,0.000,L1300
LT,14,0.000,L1400
LT,15,0.000,L1500
LT,16,0.000,L1600
LT,17,0.000,L1700
SR++++++++++++++++++++++++++++++++
SL++++++++++++++++++++++++++++++++
WR++++++++++++++++++++++++++++++++
WL++++++++++++++++++++++++++++++++
```

14 Cont.) The Template portion of RD5 file is formatted with the following nomenclature:

RT,94,50.000,R9450

```
RT        = Right Template
94        = Station 94+00
50.000    = Plus Station
R9450     = TP5 File that contains the right template info.
```

Below is the R9450.TP5 File.

```
TH,6,2.000,2.000
TS,2.000,-2.000,0,R9450_1
TS,9.000,-2.000,0,R9450_2
TS,2.000,-2.000,0,R9450_3
TS,14.000,-16.667,0,R9450_4
TS,4.000,0.000,0,R9450_5
TS,18.656,50.000,0,R9450_6
```

```
TH      = Template Header information
6       = Max number of Segments one section has on the right
          side.  In this example, the max number of section of
          the left side in all cross sections process was six.
2.000   = This value can either be the Back or Fill slope
          depending on whether the section is in a fill or cut
          situation.
```

```
 TS     = Template Segment information
 2.000  = Segment Width
-2.000  = Segment Slope
 0      = End Segment
R9450_1 = Right side, Station 94+50, Segment 1
```